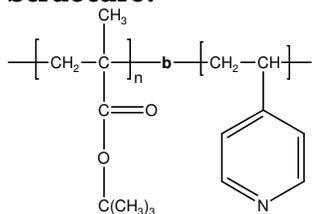


Sample Name: Poly(t-butyl methacrylate-b-4-vinyl pyridine)

Sample #: P9734-tBuMA4VP

Structure:



Composition:

| | |
|-----------------------------------|--------------|
| Mn x 10 ³ tBuMA-2VP | PDI |
| 120.0-b-110.0 | 1.15 |
| T _g for tBuMA block | 127 °C |
| T _g for 4VP block | Not distinct |

Synthesis Procedure:

Poly(t-butyl methacrylate-b-4-vinyl pyridine) is synthesized by living anionic polymerization with sequence addition of t-butyl methacrylate followed by 4-vinyl pyridine in THF using an RLi/LiCl adduct.

Characterization:

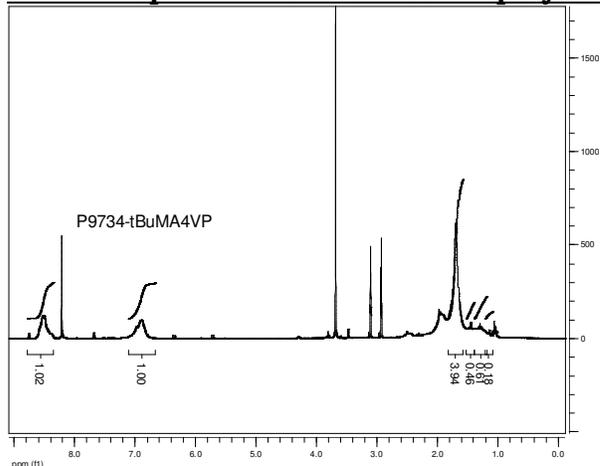
An aliquot of the anionic poly(t-butyl methacrylate) block was terminated before addition of 4-vinyl pyridine and analyzed by size exclusion chromatography (SEC) in DMF at 45 °C to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the t-butyl methacrylate protons at about 1.43 ppm with the peak area of the vinyl pyridine protons at about 8.2 ppm. Copolymer PDI is determined by SEC.

Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10°C/min. The inflection glass transition temperature (T_g) has been considered.

Solubility:

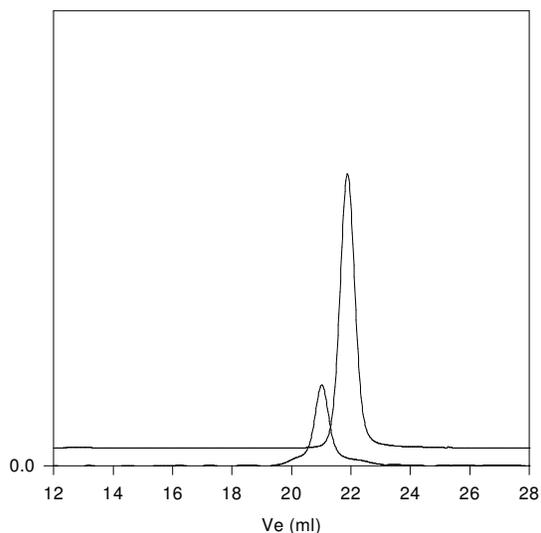
Poly(tert butyl methacrylate-b-4 vinyl pyridine) is soluble in CHCl₃, DMF, and may also solubilize in ethanol or methanol depending on the composition.

¹H-NMR Spectrum of the block copolymer:



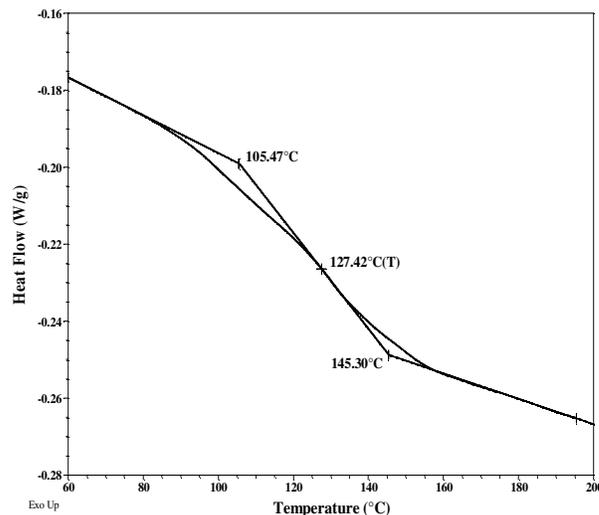
SEC of the tBuMA block:

P9734-tBuMA4VP



— Poly(tert.butylmethacrylate) M_n=120,000, M_w=132,000, PI=1.10
— Block Copolymer PtBuMA(120,000)-b-P4VP(110,000), PI=1.15

Thermogram for the polymer



Reference:

S. K. Varshney, X. F. Zhong and A. Eisenberg
Macromolecules, 1993, 26, 701-706.